Proposed Approach to the Condition Assessment of Wetlands and other Waters of the U.S. for the Bay Delta Conservation Plan

Introduction

The Department of Water Resources (DWR) proposes to utilize the assessment framework and toolset of the California Wetland Riparian Area Monitoring Program (WRAMP) for the assessment of wetlands and other waters of the U.S. for use in the Section 404(b)(1) Alternatives Analysis. This assessment will be used to determine conditions of wetland resources potentially impacted by each of the conveyance options. This method could be used in conjunction with other information regarding direct and indirect effects of the project to determine appropriate locations and types of avoidance, minimization and compensatory mitigation for unavoidable impacts from the proposed project.

Assessment Methodology

The Level 1 and Level 2 techniques from the Wetland and Riparian Areas Monitoring Program (WRAMP) will be used to analyze the distribution, abundance, and condition of wetlands in the project area. WRAMP Level 1 methods include remotely sensed mapping of aquatic habitat (i.e., depressional, lacustrine, estuarine, riverine, slope and vernal pool wetlands and riparian areas) using a vetted mapping standard and protocol (www.sfei.org/baari/methods). WRAMP Level 2 methods include a rapid assessment of wetland condition. The functions of wetland and riparian areas are understood to be reflective of aquatic resource condition as established by the conceptual models that form the underpinnings of the California Rapid Assessment Method (CRAM). CRAM is a state-wide standard developed by and vetted through multiple state and federal agencies under the auspices of the California Water Quality Monitoring Council (CWQMC). The California Wetland Monitoring Workgroup (CWMW), a subgroup of the CWQMC, was tasked with further development and implementation of CRAM as part of the statewide strategy for wetland monitoring and assessment.

CRAM will be used in the alternatives analysis to help determine the relative condition of aquatic resources in each conveyance option. Based on Level 1 profiles of wetland and riparian habitats and attendant Level 2 condition assessments, we expect this information to assist the US Army Corps of Engineers with making a determination of the Least EnvironmentallyDamaging Practicable Alternative (or LEDPA) . This approach supports careful analyses of resource extent and condition while using the best-available science and minimizing field work and data processing.

A Level 1 landscape profile consists of size-frequency analyses of each type of wetland and riparian area based on the California Aquatic Resource Inventory (CARI). The habitat typology follows directly from CRAM and is being proposed for statewide adoption. The resulting maps will serve as the sample universe for the Level 2 profiles. Separate sets of Level 1 profiles will be produced for each conveyance option.

A Level 2 landscape profile consists of the cumulative frequency distributions (CFDs) of CRAM scores based on a probabilistic survey of each type of wetland and riparian area. A probabilistic survey accounts for the inclusion probabilities of candidate sample sites, and yields survey results about the distribution of the resources among percentiles or other statistical categories of condition. In this case, the Generalized Random Tessellation Stratified Spatially-Balanced Survey Design (GRTS), in combination with a Sequential Decision Plan (SDP), will be used to minimize sample size for a targeted confidence interval (Siegmund1985, Stevens and Olsen 2004; Olsen 2005). The initial confidence interval will be set at 90%. This reflects the precision of CRAM. For the purpose of planning, it is assumed that a sample size of 20 CRAM sites per option/alternative should be adequate to compare optional routes, given a 90% confidence interval.

The landscape profile approach will allow for comparisons of impacts among options based on the acreage, size distribution, and overall condition scores.

An added benefit to the landscape profile approach is that it can assist mitigation planning at the landscape scale by providing critical information needed for avoidance and minimization of project impacts. Once a preferred conveyance route is selected, its impact profile as developed during the alternative analysis can be compared to additional profiles of ambient condition and reference condition to determine mitigation ratios and to choose the optimal mitigation scenario.